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ABSTRACT

Standardized curricula are provided for two courses for the secondary vocational education program in Mississippi: automotive body repair I and II. The nine units in automotive body repair I are as follows: introduction; related information; basic tool usage and safety; body and frame construction; basic sheet metal repair; preparing for refinishing; welding; fasteners and interior trim; and detailing. Automotive body repair II consists of eight units: safety (review and reinforcement); damage estimating; body and frame construction; welding; major metal repair; refinishing; hardware, glass, and trim; and detailing. Each unit consists of these components: objectives, with core/essential objectives indicated; suggested instructional practices; list of suggested resources; list of evaluation and suggested minimum performance standards, with core/essential objectives indicated; and performance record, with core/essential objectives indicated. A checklist for each course combining all unit performance standards into a single list is included. (YLB)

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STANDARDIZED CURRICULUM

FOR

AUTOMOTIVE BODY REPAIR

MISSISSIPPI DEPARTMENT OF EDUCATION

OFFICE OF VOCATIONAL, TECHNICAL

AND ADULT EDUCATION

June 1989

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FOREWORD

This volume is intended to be used in the State of Mississippi as a mechanism for standardizing vocational education course titles and core contents. The need for standardization of curricula was triggered by provisions in the Educational Reform Act of 1982 which mandated:

-- elimination of nearly all currently existing curriculum requirements and development of new curriculum content that is "properly sequenced" and "coordinated";

-- steps to ensure that students master one level of course work before being advanced to the next level and that progression is properly sequenced;

-- a criterion-referenced, state-wide testing program that is built upon an identified set of "basic skills" keyed to student performance in grades 3, 5, 8, and 11;

-- revised graduation requirements that take into account student performance on the basic skills and also on a test of "functional literacy skills"; and

-- a system of accrediting schools that takes into account the performance of districts, schools, and students.

In addition to the mandates of the Educational Reform Act, the Strategic Plan for Vocational and Technical Education in Mississippi also calls for improving the quality of vocational and technical education through the standardization of curricula and the articulation of secondary and postsecondary programs.

Both of these mandates were further reinforced by legislation passed in 1986 which called for the establishment of state-wide "guidelines and procedures for managing an instructional program in the public schools." This legislation calls for instructional management plans containing the following components:

1. a written list of learning objectives for every course for which academic credit is given on students' transcripts (state specified core objectives must be included);

2. <u>suggested</u> instructional practices and resources for the learning objectives;

3. standards for student performance for each learning objective; and

4. systematic procedures for evaluating student performance on the learning objectives.

Specific local district actions regarding the state-wide instructional management plan are also required, namely:

1. The objectives contained in this document are common to all programs in the state. Core objectives are designated with an asterisk. The local district is encouraged to add additional objectives to this listing to meet local needs of students and employers.

2. The local school board must officially adopt the learning objectives as the district's curricula.

3. Pass/fail policies must be based on mastery of learning objectives.

4. Student performance on the learning objectives must be systematically evaluated at least once during the school year.

5. During the school year, records of individual student performance must indicate whether or not the objectives have been mastered. The record must indicate mastery status for each of the objectives tested in the Basic Skills Assessment Program (including functional literacy skills) and must be permanently maintained on all students who do <u>not</u> master the basic and functional literacy skills prior to being tested on them.

6. Each year, information about student performance on learning objectives must be reviewed. Those objectives which students are not mastering must be identified, and a plan must be developed for improving student performance on those objectives.

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AUTOMOTIVE BODY REPAIR I

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AUTOMOTIVE BODY REPAIR I

Unit No.	Title
1	Introduction
2	Related Information
3	Basic Tool Usage and Safety
4	Body and Frame Construction
5	Basic Sheet Metal Repair
6	Preparing for Refinishing
7	Welding
8	Fasteners and Interior Trim
9	Detailing

COURSE: Automotive Body Repair I

Unit 1: Introduction

Objectives: Upon completion of this unit, the student will:

1. List facts concerning the occupational outlook for auto body technicians.
*2. Match colors of the safety code to their use.
3. Describe the different classes of fires.
*4. State general job safety rules.
*5. State dress-related safety rules.
*6. State safety rules related to equipment and tools.
*7. State safety rules related to the work area.
*8. State safety rules related to flammable liquids and toxic substances.
*9. State safety rules related to vehicles.
*10. Define terms associated with hazardous materials.
*11. Identify categories of hazardous materials.
*12. State signal words or symbols that indicate how severe a hazard may be.
*13. List methods for reducing hazardous waste.
*14. Identify general procedures for storing hazardous materials and wastes.
*15. Identify and describe the informational sections found on a Material Safety Data Sheet.
*16. Describe general first aid procedures to follow in case of an accident involving hazardous materials.
*17. Identify safety equipment to be used with hazardous materials.
*18. List steps to follow in handling spills and waste disposal.
*19. Identify agencies to be contacted in case of an accident or for more information on hazardous materials.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion

Suggested Resources:

Primary Source: Litton, Bill, and Sharpton, James. Introduction to Auto Body. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1985.

Warzecha, Mary. Hazardous Materials Fingertip Retrieval System. Alexandria, VA: American Vocational Association. 1988. (Objectives 10-19)

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will list three facts concerning the occupational outlook for auto body technicians.

*Objective 2: The student will match the six Federal safety colors to their correct use(s).

Objective 3: The student will describe the four classes of fires by stating the type of combustible materials involved in each type.

*Objective 4: The student will state three rules which relate to general safety on the job.

*Objective 5: The student will state three rules which apply to dressing safely on the job.

*Objective 6: The student will state eight rules which relate to tool and equipment safety on the job.

*Objective 7: The student will state six rules that relate to the work area safety on the job.

*Objective 8: The student will state five rules that relate to the safe use of flammable liquids and toxic substances on the job.

*Objective 9: The student will state four rules that relate to safety practices concerning vehicles used on the job.

*Objective 10: The student will define the following terms associated with hazardous materials: hazardous material, combustible, flammable, corrosive, reactive, E P toxic.

*Objective 11: The student will identify five categories of hazardous materials.

*Objective 12: The student will state in order the five signal words or symbols that indicate how severe a hazard may be.

*Objective 13: The student will list seven methods for reducing hazardous waste.

*Objective 14: The student will identify general procedures for storing hazardous materials and wastes including the following: (a) Make sure that all containers are properly labeled at all times, (b) Mark all containers containing hazardous waste materials with the words "HAZARDOUS WASTE" and with the date that the container was first used to store the waste, (c) Store wastes and materials as described by the manufacturer, (d) Make sure that containers are intact and secure at all times, and (e) Keep all containers closed securely except when being filled or emptied.

*Objective 15: The student will identify and describe nine sections of information found on a Material Safety Data Sheet which provide guidelines for creating a safe work environment.

*Objective 16: The student will describe the following first aid procedures to be followed in case of an accident involving hazardous materials: (a) Move the victim to fresh air, (b) Check the container label, Material Safety Data Sheet, or other source for first aid procedures and begin first aid at once, (c) Contact the person designated to help with first aid and evacuation

procedures, (d) Call an ambulance, (e) Follow instructions from the designated person concerning further first aid and evacuation measures, (f) remain with the person until the ambulance arrives, and (g) Attach a Material Safety Data Sheet or other information on the material to the person's clothing prior to transport.

*Objective 17: The student will identify seven different pieces of equipment which can be used to protect the body when working with hazardous materials.

*Objective 18: The student will list seven general steps to follow in handling spills and waste disposal.

*Objective 19: The student will identify three Federal and one State agency which should be contacted in case of an accident or to obtain more information about hazardous materials.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____ 1. Listed facts concerning the occupational outlook for auto body repair workers.
____ *2. Matched Federal safety colors to their use.
____ 3. Described the different classes of fires.
____ *4. Stated general job safety rules.
____ *5. Stated dress-related safety rules.
____ *6. Stated safety rules related to equipment and tools.
____ *7. Stated safety rules related to the work area.
____ *8. Stated safety rules related to flammable liquids and toxic substances.
____ *9. Stated safety rules related to vehicles.
____ *10. Defined terms associated with hazardous materials.
____ *11. Identified categories of hazardous materials.
____ *12. Stated signal words or symbols that indicate how severe a hazard may be.
____ *13. Listed methods for reducing hazardous waste.
____ *14. Identified general procedures for storing hazardous materials and wastes.
____ *15. Identified and described the informational sections found on a Material Safety Data Sheet.
____ *16. Described general first aid procedures to follow in case of an accident involving hazardous materials.
____ *17. Identified safety equipment to be used with hazardous materials.
____ *18. Listed steps to follow in handling spills and waste disposal.
____ *19. Identified agencies to be contacted in case of an accident or for more information on hazardous materials.

*Indicates core/essential objectives

COURSE: Automotive Body Repair I

Unit 2: Related Information

Objectives: Upon completion of this unit, the student will:

1. Name purposes of the VICA organization.
2. Name beliefs that the VICA creed emphasizes.

Suggested Instructional Procedures:

Lecture-discussion

Suggested Resources:

Primary Source: Manuel, Edward F., and Penner, Wayman R. Auto Body: Repair and Repainting. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1974.

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will name five purposes of the VICA organization.
Objective 2: The student will name four beliefs that the VICA creed emphasizes.

Performance Record: Place a check by each objective the student achieved:

____ 1. Named purposes of the VICA organization.
____ 2. Named beliefs that the VICA creed emphasizes.

COURSE: Automotive Body Repair I

Unit 3: Basic Tool Usage and Safety

Objectives: Upon completion of this unit, the student will:

*1. Identify general hand tools used in auto body repair.
*2. Identify and describe the use of hand tools used for body straightening.
*3. Identify hand tools used for body filling and shaping.
*4. Identify hand tools used for special body work.
*5. Identify types of eye safety protection.
*6. Identify and describe the use of hand operated power tools.
*7. Identify and describe the use of portable and stationary power equipment.
*8. State rules for the safe use of power tools at work.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Illustrated lecture-discussion

Suggested Resources:

Primary Source: Litton, Bill, and Sharpton, James. Introduction to Auto Body. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1985.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify 45 different general hand tools used in auto body repair including wrenches, pliers, screwdrivers, sockets and accessories, hammers, punches, chisels, and miscellaneous tools.
*Objective 2: The student will identify 20 body straightening tools including hammers, dollies, spoons, files, picks, and miscellaneous tools and describe one use of each tool.
*Objective 3: The student will identify three hand tools used for body filling and shaping work.
*Objective 4: The student will identify eight body specialty tools.
*Objective 5: The student will identify four types of eye safety protection equipment.
*Objective 6: The student will identify nine hand operated power tools and describe one use of each tool.
*Objective 7: The student will identify twelve portable or stationary power tools and describe one use of each tool.

*Objective 8: The student will state eight rules for safe use of power tools at work.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Identified general hand tools used in auto body repair.
____*2. Identified and described the use of hand tools used for body straightening.
____*3. Identified hand tools used for body filling and shaping.
____*4. Identified hand tools used for special body work.
____*5. Identified types of eye safety protection.
____*6. Identified and described the use of hand operated power tools.
____*7. Identified and described the use of portable and stationary power equipment.
____*8. Stated rules for the safe use of power tools at work.

*Indicates core/essential objectives

COURSE: Automotive Body Repair I

Unit 4: Body and Frame Construction

Objectives: Upon completion of this unit, the student will:

*1. List major components of the front-end assembly.
2. Identify types of suspensions.
3. Identify front cowl panels.
4. Identify door section components.
5. Identify floor panel sections.
6. Identify rocker panel and pillar components.
*7. Identify roof components.
8. Identify major components of the rear body assembly.
*9. Name types of frame construction.
*10. Use automotive reference texts and service manuals to identify body and frame components.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Laboratory demonstration and practice

Suggested Resources:

Primary Source: Litton, Bill, and Sharpton, James. Introduction to Auto Body. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1985.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will list five major components of a front end assembly.
Objective 2: The student will identify the two major types of suspensions.
Objective 3: The student will identify six front cowl patterns.
Objective 4: The student will identify three door section components.
Objective 5: The student will identify two floor section components.
Objective 6: The student will identify four rocker panel and pillar components.
*Objective 7: The student will identify five roof components.
Objective 8: The student will identify five major components of the rear body assembly.
*Objective 9: The student will name the two types of frame construction.
*Objective 10: The student will use automotive reference texts and service manuals to identify body and frame components on

a teacher-developed assignment sheet with 70 percent accuracy.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____ *1. Listed major components of the front-end assembly.
____ 2. Identified types of suspensions.
____ 3. Identified front cowl panels.
____ 4. Identified door section components.
____ 5. Identified floor panel sections.
____ 6. Identified rocker panel and pillar components.
____ *7. Identified roof components.
____ 8. Identified major components of the rear body assembly.
____ *9. Named types of frame construction.
____ *10. Used automotive reference texts and service manuals to identify body and frame components.

*Indicates core/essential objectives

COURSE: Automotive Body Repair I

Unit 5: Basic Sheet Metal Repair

Objectives: Upon completion of this unit, the student will:

*1. State the purpose of preparing a surface for metal repair.
*2. Arrange in order the basic steps of surface preparation for metal repair.
3. State the amount of exterior and interior surface area that needs to be repaired.
4. Name moldings and trim that may need to be removed in surface preparation.
*5. Prepare exterior and interior metal surfaces for repair.
*6. Arrange in order the steps in assessing auto body metal damage.
*7. State the purpose of aligning detachable parts.
*8. Describe the effects of bending auto body sheet metal.
*9. Identify classes of metal damage.
*10. Use a hammer and dolly to rough out a panel.
*11. Use a bumping or slapping spoon to rough out a panel.
*12. Align a hood.
*13. Align a fender.
*14. Align a door.
*15. Align a deck lid and check for proper seal.
*16. Identify basic polishing techniques used in metal finishing.
17. Describe the applications of the different types of grinders used in metal finishing.
*18. State general safety rules for using power grinders.
*19. Use a grinder to remove surface rust and damaged paint.
*20. Prepare a steel panel for body filler.
*21. List guidelines for heat shrinking sheet metal.
*22. List reasons for using proper heat in shrinking sheet metal.
*23. Heat shrink a high spot in a metal panel.
*24. Heat shrink a gouge in a steel panel.
*25. Cold shrink a high spot in a sheet metal panel.
*26. List safety rules for using body fillers.
*27. List guidelines for mixing and applying body fillers.
*28. Use plastic body filler to repair a metal panel.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Laboratory demonstration and practice

Suggested Resources:

Primary Source: Walters, Terry, and Walker, Sharon. Automotive Body Repairer. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1986.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will state the purpose of preparing a surface for metal repair.
*Objective 2: The student will arrange the five steps in surface repair in their proper order.
Objective 3: The student will state the proper amount of surface that should be prepared on a exterior and interior panel surface.
Objective 4: The student will name four front, six exterior side, three interior side, and three rear moldings and trim pieces that may need to be removed in surface preparation.
*Objective 5: The student will prepare an exterior and interior metal surface for repair following industry practices and to industry specifications.
*Objective 6: The student will arrange the five steps in assessing metal damage in their proper order.
*Objective 7: The student will state one purpose of aligning detachable parts on an auto body.
*Objective 8: The student will state two effects of bending auto sheet metal.
*Objective 9: The student will identify six classes of metal damage.
*Objective 10: The student will use a hammer and dolly to rough out a damaged panel to meet industry standards for repair.
*Objective 11: The student will use a bumping or slapping spoon to rough out a damaged panel to meet industry standards for repair.
*Objective 12: The student will align a hood to meet manufacturer's specifications.
*Objective 13: The student will align a fender to meet manufacturer's specifications.
*Objective 14: The student will align a door to meet manufacturer's specifications.
*Objective 15: The student will align a deck lid to manufacturer's specifications and check to see that it seals properly.
*Objective 16: The student will identify the two basic polishing techniques used in metal finishing.
Objective 17: The student will describe the correct applications of disc and orbital grinders used in metal finishing operations.
*Objective 18: The student will state seven general safety rules for using grinders.
*Objective 19: The student will use a grinder to remove surface rust and damaged paint to industry standards.

*Objective 20: The student will prepare a steel panel for body filler following industry practices and to meet industry standards.

*Objective 21: The student will list six guidelines to follow in heat shrinking metal.

*Objective 22: The student will list two reasons for using proper heat in heat shrinking metal.

*Objective 23: The student will heat shrink a high spot in a metal panel to industry standards.

*Objective 24: The student will heat shrink a gouge in a metal panel to industry standards.

*Objective 25: The student will cold shrink a high spot in a sheet metal panel.

*Objective 26: The student will list five personal safety rules and two tool and vehicle protection rules to follow in working with body fillers.

*Objective 27: The student will list six guidelines for mixing plastic body filler and hardener.

*Objective 28: The student will use plastic body filler to repair a metal panel to industry specifications.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____ *1. Stated the purpose of preparing a surface for metal repair.
____ *2. Arranged in order the basic steps of surface preparation for metal repair.
____ 3. Stated the amount of exterior and interior surface area that needs to be repaired.
____ 4. Named moldings and trim that may need to be removed in surface preparation.
____ *5. Prepared exterior and interior metal surfaces for repair.
____ *6. Arranged in order the steps in assessing auto body metal damage.
____ *7. Stated the purpose of aligning detachable parts.
____ *8. Described the effects of bending auto body sheet metal.
____ *9. Identified classes of metal damage.
____ *10. Used a hammer and dolly to rough out a panel.
____ *11. Used a bumping or slapping spoon to rough out a panel.
____ *12. Aligned a hood.
____ *13. Aligned a fender.
____ *14. Aligned a door.
____ *15. Aligned a deck lid and checked for proper seal.
____ *16. Identified basic polishing techniques used in metal finishing.
____ *17. Described the applications of the different types of grinders used in metal finishing.
____ *18. Stated general safety rules for using power grinders.
____ *19. Used a grinder to remove surface rust and damaged paint.
____ *20. Prepared a steel panel for body filler.
____ *21. Listed guidelines for heat shrinking sheet metal.

____*22. Listed reasons for using proper heat in shrinking sheet metal.
____*23. Heat shrunk a high spot in a metal panel.
____*24. Heat shrunk a gouge in a steel panel.
____*25. Cold shrunk a high spot in a sheet metal panel.
____*26. Listed safety rules for using body fillers.
____*27. Listed guidelines for mixing and applying body fillers.
____*28. Used plastic body filler to repair a metal panel.

*Indicates core/essential objectives

COURSE: Automotive Body Repair I

Unit 6: Preparing for Refinishing

Objectives: Upon completion of this unit, the student will:

*1. State the purposes of sanding.
*2. State the purpose of featheredging.
*3. Compare the characteristics of wet and dry sanding.
*4. List guidelines for hand sanding.
*5. Featheredge broken paint.
*6. Wet sand for a complete paint job.
*7. Dry sand for a complete paint job.
*8. Scuff-sand a surface.
*9. List guidelines for effective application of masking paper and tape.
10. List guidelines for removing masking.
*11. Mask a vehicle for spot repair.
*12. Mask a vehicle for panel repair.
*13. Mask a vehicle for a complete paint job.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Laboratory demonstration and practice

Suggested Resources:

Primary Source: Walker, Susan S., and VanWinkle, James. Automotive Body Refinisher. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1986.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will state three purposes of sanding.
*Objective 2: The student will state one purpose of featheredging.
*Objective 3: The student will list two characteristics of wet sanding in comparison to dry sanding.
*Objective 4: The student will list three guidelines for hand sanding.
*Objective 5: The student will featheredge broken paint to meet industry standards.
*Objective 6: The student will wet sand a vehicle for a complete paint job to meet industry standards.
*Objective 7: The student will dry sand a vehicle for a complete paint job to meet industry standards.
*Objective 8: The student will scuff-sand a surface to meet industry standards.
*Objective 9: The student will list nine guidelines for effective application of masking paper and tape.

Objective 10: The student will list two guidelines for removing masking from fresh paint.

*Objective 11: The student will mask a vehicle to industry standards for a spot repair.

*Objective 12: The student will mask a vehicle to industry standards for a panel repair.

*Objective 13: The student will mask a vehicle to industry standards for a complete paint job.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____ *1. Stated the purposes of sanding.
____ *2. Stated the purpose of featheredging.
____ *3. Compared the characteristics of wet and dry sanding.
____ *4. Listed guidelines for hand sanding.
____ *5. Featheredged broken paint.
____ *6. Wet sanded for a complete paint job.
____ *7. Dry sanded for a complete paint job.
____ *8. Scuff-sanded a surface.
____ *9. Listed guidelines for effective application of masking paper and tape.
____ 10. Listed guidelines for removing masking.
____*11. Masked a vehicle for spot repair.
____*12. Masked a vehicle for panel repair.
____*13. Masked a vehicle for a complete paint job.

*Indicates core/essential objectives

COURSE: Automotive Body Repair I

Unit 7: Welding

Objectives: Upon completion of this unit, the student will:

*1. State welding safety rules.
*2. Identify components of oxyacetylene welding and cutting equipment.
*3. Name characteristics of a good weld.
*4. Identify the different types of oxyacetylene flames.
*5. Name factors that should be considered in selecting filler rods and welding tips.
*6. Set up equipment for oxyacetylene welding.
*7. Turn on, light, adjust, and turn off oxyacetylene welding equipment.
*8. Weld a butt joint with a filler rod.
9. List purposes of flux.
*10. List purposes of braze welding filler rod composition.
*11. Braze weld a square-groove butt joint.
*12. State differences between flashback and backfire.
*13. List in order the steps to follow in case of flashback.
*14. Turn on, light, adjust, and turn off oxyacetylene cutting equipment.
*15. Cut mild steel plate.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Laboratory demonstration and practice

Suggested Resources:

Primary Source: Walters, Terry, and Walker, Sharon. Automotive Body Repairer. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1986.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will state eight general welding safety rules and seven safety rules related specifically to gas welding and cutting.
*Objective 2: The student will identify the major components of an oxyacetylene welding and cutting unit including the major parts of the tanks, regulators, and torch body.
*Objective 3: The student will name three characteristics of a good weld.
*Objective 4: The student will identify oxidizing, neutral, and carburizing flames.

*Objective 5: The student will name two factors that should be considered in selecting filler rods and welding tips.
*Objective 6: The student will set up oxyacetylene welding and cutting equipment following industry standards.
*Objective 7: The student will turn on, ignite, adjust to a neutral flame, and turn off oxyacetylene welding equipment.
*Objective 8: The student will weld a butt joint to industry standards on mild steel using a filler rod.
Objective 9: The student will list four purposes of flux.
*Objective 10: The student will list four purposes of braze filler rod composition.
*Objective 11: The student will braze a square-grove butt joint to industry standards.
*Objective 12: The student will state a difference between flashback and backfire.
*Objective 13: The student will list five steps to follow in case of flashback.
*Objective 14: The student will turn on, light, adjust, and turn off oxyacetylene cutting equipment.
*Objective 15: The student will cut mild steel plate.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____ *1. Stated welding safety rules.
____ *2. Identified components of oxyacetylene welding and cutting equipment.
____ *3. Named characteristics of a good weld.
____ *4. Identified the different types of oxyacetylene flames.
____ *5. Named factors that should be considered in selecting filler rods and welding tips.
____ *6. Set up equipment for oxyacetylene welding.
____ *7. Turned on, lit, adjusted, and turned off oxyacetylene welding equipment.
____ *8. Welded a butt joint with a filler rod.
____ 9. Listed purposes of flux.
____*10. Listed purposes of braze welding filler rod composition.
____*11. Braze welded a square-groove butt joint.
____*12. Stated differences between flashback and backfire.
____*13. Listed in order the steps to follow in case of flashback.
____*14. Turned on, lit, adjusted, and turned off oxyacetylene cutting equipment.
____*15. Cut mild steel plate.

*Indicates core/essential objectives

COURSE: Automotive Body Repair I

Unit 8: Fasteners and Interior Trim

Objectives: Upon completion of this unit, the student will:

1. Identify the different types of bolts used in body and chassis construction and repair.
2. Identify the different types of nuts used in body and chassis construction and repair.
3. Identify the different types of screws used in body and chassis construction and repair.
4. Identify the different types of washers used in body and chassis construction and repair.
5. Identify the different types of rivets used in body and chassis construction and repair.
6. Identify common interior hardware and trim items.
*7. List mounting methods for interior handles.
8. List methods for fastening headliners.
*9. Remove and reinstall a clip-attached handle.
*10. Remove and reinstall a screw-attached handle.
*11. Remove and reinstall a door trim panel.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Laboratory demonstration and practice

Suggested Resources:

Primary Source: Litton, Bill, and Sharpton, James. Introduction to Auto Body. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1985. (Objectives 1-5)

Walters, Terry, and Walker, Susan S. Automotive Body Repairer. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1986. (Objectives 6-11)

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will identify four types of bolts that are commonly used in body and chassis construction and repair.

Objective 2: The student will identify six types of nuts that are commonly used in body and chassis construction and repair.

Objective 3: The student will identify the two major types of screws and five types of screw heads that are commonly used in body and chassis construction and repair.

Objective 4: The student will identify five types of washers that are commonly used in body and chassis construction and repair.

Objective 5: The student will identify four types of rivets that are commonly used in body and chassis construction and repair.

Objective 6: The student will identify ten common interior hardware and trim items.

*Objective 7: The student will list the two common methods for attaching interior handles.

Objective 8: The student will list three methods for fastening headliners.

*Objective 9: The student will remove and reinstall a clip-attached handle.

*Objective 10: The student will remove and reinstall a screw-attached handle.

*Objective 11: The student will remove a door trim panel.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____ 1. Identified the different types of bolts used in body and chassis construction and repair.
____ 2. Identified the different types of nuts used in body and chassis construction and repair.
____ 3. Identified the different types of screws used in body and chassis construction and repair.
____ 4. Identified the different types of washers used in body and chassis construction and repair.
____ 5. Identified the different types of rivets used in body and chassis construction and repair.
____ 6. Identified common interior hardware and trim items.
____ *7. Listed mounting methods for interior handles.
____ 8. Listed methods for fastening headliners.
____ *9. Removed and reinstalled a clip-attached handle.
____ *10. Removed and reinstalled a screw-attached handle.
____ *11. Removed and reinstalled a door trim panel.

*Indicates core/essential objectives

COURSE: Automotive Body Repair I

Unit 9: Detailing

Objectives: Upon completion of this unit, the student will:

*1. List safety precautions to observe when using volatile cleaners.
*2. Match general types of materials used in interior detailing to specific places where each is used.
3. Match common spots, stains, and soils to cleaning materials or products recommended for their removal.
*4. Clean painted interior surfaces.
*5. State the use of common paint repair and protection products.
*6. State guidelines for quality exterior detailing.
*7. Detail a complete body paint job.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Laboratory demonstration and practice

Suggested Resources:

Primary Source: Litton, Bill, and Sharpton, James. Introduction to Auto Body. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1985. (Objectives 1-5)

Walker, Susan S., and VanWinkle, James. Automotive Body Refinisher. Stillwater OK: Oklahoma State Board of Vocational and Technical Education. 1986. (Objectives 6-7)

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will list four safety precautions to be followed when using volatile cleaners.
*Objective 2: The student will match five different types of materials used in interior detailing to specific places where these materials are used.
Objective 3: The student will match four common spots, stains, or soils to cleaning materials or products recommended for their removal.
*Objective 4: The student will clean a painted interior surface following industry standards.
*Objective 5: The student will state one use of five different paint repair and protection products.
*Objective 6: The student will state four guidelines for each of the following jobs: compounding, polishing, and waxing.

*Objective 7: The student will detail a complete body paint job to industry standards.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Listed safety precautions to observe when using volatile cleaners.
____*2. Matched general types of materials used in interior detailing to specific places where each is used.
____ 3. Matched common spots, stains, and soils to cleaning materials or products recommended for their removal.
____*4. Cleaned painted interior surfaces.
____*5. Stated the use of common paint repair and protection products.
____*6. Stated guidelines for quality exterior detailing.
____*7. Detailed a complete body paint job.

*Indicates core/essential objectives

AUTOMOTIVE BODY REPAIR II

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AUTOMOTIVE BODY REPAIR II

Unit No.	Title
1	Safety (Review and Reinforcement)
2	Damage Estimating
3	Body and Frame Construction
4	Welding
5	Major Metal Repair
6	Refinishing
7	Hardware, Glass, and Trim
8	Detailing

COURSE: Automotive Body Repair II

Unit 1: Safety (Review and Reinforcement)

Objectives: Upon completion of this unit, the student will:

*1. Match colors of the safety code to their use.
2. Describe the different classes of fires.
*3. State general job safety rules.
*4. State dress-related safety rules.
*5. State safety rules related to equipment and tools.
*6. State safety rules related to the work area.
*7. State safety rules related to flammable liquids and toxic substances.
*8. State safety rules related to vehicles.
*9. Define terms associated with hazardous materials.
*10. Identify categories of hazardous materials.
*11. State signal words or symbols that indicate how severe a hazard may be.
*12. List methods for reducing hazardous waste.
*13. Identify general procedures for storing hazardous materials and wastes.
*14. Identify and describe the informational sections found on a Material Safety Data Sheet.
*15. Describe general first aid procedures to follow in case of an accident involving hazardous materials.
*16. Identify safety equipment to be used with hazardous materials.
*17. List steps to follow in handling spills and waste disposal.
*18. Identify agencies to be contacted in case of an accident or for more information on hazardous materials.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion

Suggested Resources:

Primary Source: Litton, Bill, and Sharpton, James. Introduction to Auto Body. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1985.

Warzecha, Mary. Hazardous Materials Fingertip Retrieval System. Alexandria, VA: American Vocational Association. 1988. (Objectives 9-18)

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will match the six Federal safety colors to their correct use(s).

Objective 2: The student will describe the four classes of fires by stating the type of combustible materials involved in each type.

*Objective 3: The student will state three rules which relate to general safety on the job.

*Objective 4: The student will state three rules which apply to dressing safely on the job.

*Objective 5: The student will state eight rules which relate to tool and equipment safety on the job.

*Objective 6: The student will state six rules that relate to the work area safety on the job.

*Objective 7: The student will state five rules that relate to the safe use of flammable liquids and toxic substances on the job.

*Objective 8: The student will state four rules that relate to safety practices concerning vehicles used on the job.

*Objective 9: The student will define the following terms associated with hazardous materials: hazardous material, combustible, flammable, corrosive, reactive, E P toxic.

*Objective 10: The student will identify five categories of hazardous materials.

*Objective 11: The student will state in order the five signal words or symbols that indicate how severe a hazard may be.

*Objective 12: The student will list seven methods for reducing hazardous waste.

*Objective 13: The student will identify general procedures for storing hazardous materials and wastes including the following: (a) Make sure that all containers are properly labeled at all times, (b) Mark all containers containing hazardous waste materials with the words "HAZARDOUS WASTE" and with the date that the container was first used to store the waste, (c) Store wastes and materials as described by the manufacturer, (d) Make sure that containers are intact and secure at all times, and (e) Keep all containers closed securely except when being filled or emptied.

*Objective 14: The student will identify and describe nine sections of information found on a Material Safety Data Sheet which provide guidelines for creating a safe work environment.

*Objective 15: The student will describe the following first aid procedures to be followed in case of an accident involving hazardous materials: (a) Move the victim to fresh air, (b) Check the container label, Material Safety Data Sheet, or other source for first aid procedures and begin first aid at once, (c) Contact the person designated to help with first aid and

evacuation procedures, (d) Call an ambulance, (e) Follow instructions from the designated person concerning further first aid and evacuation measures, (f) remain with the person until the ambulance arrives, and (g) Attach a Material Safety Data Sheet or other information on the material to the person's clothing prior to transport.

*Objective 16: The student will identify seven different pieces of equipment which can be used to protect the body when working with hazardous materials.

*Objective 17: The student will list seven general steps to follow in handling spills and waste disposal.

*Objective 18: The student will identify three Federal and one State agency which should be contacted in case of an accident or to obtain more information about hazardous materials.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____ *1. Matched Federal safety colors to their use.
____ 2. Described the different classes of fires.
____ *3. Stated general job safety rules.
____ *4. Stated dress-related safety rules.
____ *5. Stated safety rules related to equipment and tools.
____ *6. Stated safety rules related to the work area.
____ *7. Stated safety rules related to flammable liquids and toxic substances.
____ *8. Stated safety rules related to vehicles.
____ *9. Defined terms associated with hazardous materials.
____*10. Identified categories of hazardous materials.
____*11. Stated signal words or symbols that indicate how severe a hazard may be.
____*12. Listed methods for reducing hazardous waste.
____*13. Identified general procedures for storing hazardous materials and wastes.
____*14. Identified and described the informational sections found on a Material Safety Data Sheet.
____*15. Described general first aid procedures to follow in case of an accident involving hazardous materials.
____*16. Identified safety equipment to be used with hazardous materials.
____*17. Listed steps to follow in handling spills and waste disposal.
____*18. Identified agencies to be contacted in case of an accident or for more information on hazardous materials.

*Indicates core/essential objectives

COURSE: Automotive Body Repair II

Unit 2: Damage Estimating

Objectives: Upon completion of this unit, the student will:

*1. Name the functions of an estimate.
*2. List the steps in making an estimate.
*3. Describe the procedure for completing a form used in estimating.
*4. List factors that determine if a part is to be repaired or replaced.
*5. List factors that determine time in straightening panels.
*6. Write an estimate to refinish a door.
*7. Write an estimate to straighten and refinish a door.
*8. Write an estimate to straighten and replace parts on a front end assembly.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Student assignment

Suggested Resources:

Primary Source: Manuel, Edward F., and Penner, Wayman R. Auto Body Repair and Repainting. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1974.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will name four functions of an estimate.
*Objective 2: The student will list the three major steps in making an estimate.
*Objective 3: The student will describe the six items that must be completed on an estimate form.
*Objective 4: The student will list two factors that determine if a part is to be repaired or replaced.
*Objective 5: The student will list two factors that determine time in straightening panels.
*Objective 6: Given preliminary information and a Collision Estimating Manual, the student will complete a written estimate form for refinishing a door.
*Objective 7: Given preliminary information and a Collision Estimating Manual, the student will complete a written estimate form for straightening and refinishing a door.
*Objective 8: Given preliminary information and a Collision Estimating Manual, the student will complete a written

estimate form for straightening and replacing parts on a front end assembly.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Named the functions of an estimate.
____*2. Listed the steps in making an estimate.
____*3. Described the procedure for completing a form used in estimating.
____*4. Listed factors that determine if a part is to be repaired or replaced.
____*5. Listed factors that determine time in straightening panels.
____*6. Wrote an estimate to refinish a door.
____*7. Wrote an estimate to straighten and refinish a door.
____*8. Wrote an estimate to straighten and replace parts on a front end assembly.

*Indicates core/essential objectives

COURSE: Automotive Body Repair II

Unit 3: Body and Frame Construction

Objectives: Upon completion of this unit, the student will:

1. Identify major parts of frames.
2. Describe the different types of frame and unitized body damage.
3. Identify the frame repair control points.
*4. Identify equipment used in gauging frame damage.
5. Identify the parts of a centering gauge.
6. State guidelines for installing centering gauges.
7. List methods for mounting centering gauges.
8. Identify parts of a tram gauge.
*9. Arrange in order the steps for gauging frame damage.
*10. Describe major actions performed during frame alignment.
11. Identify major types of frame straighteners.
*12. State safety rules to observe when using frame alignment equipment.
13. State guidelines for aligning frames.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion

Suggested Resources:

Primary Source: Hilley, Robert. Automotive Frame Repairer. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1986.

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will identify ten parts of a perimeter frame, twelve parts of a unitized body, and four parts of a combination frame.

Objective 2: The student will describe four types of frame and unitized body damage.

Objective 3: The student will identify three frame repair control points on a conventional frame and three frame repair control points on a unitized body.

*Objective 4: The student will identify the following equipment used in gauging frame damage: centering gauges, combination centering and datum-line gauge, tram gauge, tracking gauge, and laser-beam gauging system.

Objective 5: The student will identify four parts of a centering gauge.

Objective 6: The student will state six guidelines for installing centering gauges.

Objective 7: The student will list four methods for installing centering gauges.
Objective 8: The student will identify three parts of a tram gauge.
*Objective 9: The student will arrange in order the steps for gauging frame damage.
*Objective 10: The student will describe the three major actions performed during frame alignment.
Objective 11: The student will identify three major types of frame straighteners.
*Objective 12: The student will state seven safety rules to observe when using frame alignment equipment.
Objective 13: The student will state six guidelines for aligning frames.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____ 1. Identified major parts of frames.
____ 2. Described the different types of frame and unitized body damage.
____ 3. Identified the frame repair control points.
____ *4. Identified equipment used in gauging frame damage.
____ 5. Identified the parts of a centering gauge.
____ 6. Stated guidelines for installing centering gauges.
____ 7. Listed methods for mounting centering gauges.
____ 8. Identified parts of a tram gauge.
____ *9. Arranged in order the steps for gauging frame damage.
____ *10. Described major actions performed during frame alignment.
____ 11. Identified major types of frame straighteners.
____ *12. Stated safety rules to observe when using frame alignment equipment.
____ 13. Stated guidelines for aligning frames.

*Indicates core/essential objectives

COURSE: Automotive Body Repair II

Unit 4: Welding

Objectives: Upon completion of this unit, the student will:

*1. Name common equipment needed in shielded metal arc welding (SMAW).
2. Distinguish between straight and reverse polarity.
*3. Name the different types of operating adjustments on an arc welder.
*4. State safety precautions to follow in operating arc welding equipment.
*5. Start, stop, and restart an arc.
*6. Make a pad in the flat position.
*7. Make a square groove butt weld.
*8. Identify the major components of a metal-inert-gas (MIG) welding unit.
*9. Label elements of the MIG welding process.
10. State characteristics of short-circuit transfer.
*11. State the functions of the different controls on a typical MIG welding unit.
12. Set up a spool-type wire feeder for MIG welding.
13. Set up a flowmeter regulator for MIG shielding gases.
14. Use short-circuit transfer to lay stringer beads on mild steel in the flat position.
15. Use short-circuit transfer to construct a fillet weld lap joint on mild steel in the flat position.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Laboratory demonstration and practice

Suggested Resources:

Primary Sources: Manuel, Edward F., and Penner, Wayman R. Auto Body: Repair and Repainting. Stillwater OK: Oklahoma State Board of Vocational and Technical Education. 1974. (Objectives 1-7)

Walters, Terry, and Walker, Susan S. Automotive Body Repairer. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1986. (Objectives 8-15)

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will name nine pieces of equipment needed for shielded metal arc welding (SMAW).

Objective 2: The student will distinguish between straight and reverse polarity by describing the current flow pattern.

*Objective 3: The student will name the two types of operating adjustments on an arc welder.

*Objective 4: The student will state fifteen safety precautions to follow in operating arc welding equipment.

*Objective 5: The student will start, stop, and restart an arc.

*Objective 6: The student will make a pad on mild steel in the flat position to specifications.

*Objective 7: The student will make a square grove butt weld on mild steel to specifications.

*Objective 8: The student will identify five major components of a metal-inert-gas (MIG) welding unit.

*Objective 9: The student will label seven parts of the MIG welding process.

Objective 10: The student will state five characteristics of the short-circuit transfer.

Objective 11: The student will state four functions of each of the following controls: machine controls, electrical controls, and wire-feeder controls.

Objective 12: The student will set up a spool-type wire feeder for MIG welding following manufacturer's specifications.

Objective 13: The student will set up a flowmeter regulator for MIG shielding gases following manufacturer's specifications.

Objective 14: The student will use short-circuit transfer to lay stringer beads to specifications on mild steel in the flat position.

Objective 15: The student will use short-circuit transfer to construct a fillet weld lap joint to specifications on mild steel in the flat position.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____ *1. Named common equipment needed in shielded metal arc welding (SMAW).
____ 2. Distinguished between straight and reverse polarity.
____ *3. Named the different types of operating adjustments on an arc welder.
____ *4. Stated safety precautions to follow in operating arc welding equipment.
____ *5. Started, stopped, and restarted an arc.
____ *6. Made a pad in the flat position.
____ *7. Made a square groove butt weld.

____ *8. Identified the major components of a metal-inert-gas (MIG) welding unit.
____ *9. Labeled elements of the MIG welding process.
____ 10. Stated characteristics of short-circuit transfer.
____ *11. Stated the functions of the different controls on a typical MIG welding unit.
____ 12. Set up a spool-type wire feeder for MIG welding.
____ 13. Set up a flowmeter regulator for MIG shielding gases.
____ 14. Used short-circuit transfer to lay stringer beads on mild steel in the flat position.
____ 15. Used short-circuit transfer to construct a fillet weld lap joint on mild steel in the flat position.

*Indicates core/essential objectives

COURSE: Automotive Body Repair II

Unit 5: Major Metal Repair

Objectives: Upon completion of this unit, the student will:

*1. List choices or options for correction of structural panel damage.
2. Identify the different types of structural panel welds.
*3. List methods for removing welded panels.
4. Section a quarter panel.
5. Repanel a door.
6. Replace an outer rocker panel.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Laboratory demonstration and practice

Suggested Resources:

Primary Source: Hilley, Robert. Automotive Frame Repairer. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1986.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will list three choices or options for correction of structural panel damage.
Objective 2: The student will identify six different types of structural panel welds.
*Objective 3: The student will list four different methods for removing welded panels.
Objective 4: The student will section a damaged quarter panel to industry standards of repair.
Objective 5: The student will repanel a door by replacing the outer panel to industry standards of repair.
Objective 6: The student will replace an outer rocker panel to meet industry standards of repair.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Listed choices or options for correction of structural panel damage.
____ 2. Identified the different types of structural panel welds.
____*3. Listed methods for removing welded panels.
____ 4. Sectioned a quarter panel.

____ 5. Repaneled a door.
____ 6. Replaced an outer rocker panel.

*Indicates core/essential objectives

COURSE: Automotive Body Repair II

Unit 6: Refinishing

Objectives: Upon completion of this unit, the student will:

*1. Identify and describe the use of automotive refinishing equipment.
*2. Identify the parts of a suction-feed spray gun.
*3. State general safety rules for paint equipment.
*4. Thin paint; fill a suction-feed spray gun; and set for correct pressure, fan pattern, and fluid flow.
*5. Clean a suction-feed spray gun.
*6. Drain and service an air compressor.
*7. List the steps in painting a vehicle.
*8. Describe the different types of paint undercoat materials.
*9. List the basic paint undercoats.
*10. State guidelines for quality undercoating.
*11. Describe the types of finishes used on today's vehicles.
*12. Describe the different types of coat application techniques.
*13. Describe the different degrees of coat thickness.
*14. State the most common paint problems and their causes.
*15. State guidelines for preventing dirty paint.
*16. Mix and apply a primer-surfacer, guide coat, and sealer.
*17. Prime and seal a replacement panel.
*18. Color match and apply metallic paint.
*19. Color match paint and perform a spot repair.
*20. Paint a panel.
*21. Perform a complete paint job.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Laboratory demonstration and practice

Suggested Resources:

Primary Source: Walker, Susan S., and VanWinkle, James. Automotive Body Refinisher. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1986.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify fourteen tools and pieces of equipment used in automotive refinishing and state one use of each piece.
*Objective 2: The student will identify ten parts of a suction-feed spray gun.
*Objective 3: The student will state five safety rules to be followed in using safety equipment.

*Objective 4: The student will prepare paint; fill a suction-feed spray gun; and set the correct pressure, fan pattern, and fluid flow to industry specifications.
*Objective 5: The student will clean a suction-feed spray gun according to the manufacturer's procedures.
*Objective 6: The student will drain and service an air compressor following manufacturer's procedures.
*Objective 7: The student will list in order eight steps in painting a vehicle.
*Objective 8: The student will describe one characteristic of eight different types of materials used in undercoating.
*Objective 9: The student will list three basic paint undercoats.
*Objective 10: The student will state eight guidelines for quality undercoating.
*Objective 11: The student will describe one characteristic of five different topcoat finishes.
*Objective 12: The student will describe one characteristic of three different coat application techniques.
*Objective 13: The student will describe three degrees of coat thickness.
*Objective 14: The student will state four common paint problems and one cause of each problem.
*Objective 15: The student will state nine guidelines for preventing dirty paint.
*Objective 16: The student will mix and apply an acrylic lacquer primer-surfacer, guide coat, and sealer to industry standards.
*Objective 17: The student will prime and seal a replacement panel to industry standards.
*Objective 18: The student will color match and apply metallic paint to industry standards.
*Objective 19: The student will color match paint and perform a spot repair to industry standards.
*Objective 20: The student will paint a panel to meet industry standards of repair.
*Objective 21: The student will perform a complete paint job to meet industry standards.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____ *1. Identified and described the use of automotive refinishing equipment.
____ *2. Identified the parts of a suction-feed spray gun.
____ *3. Stated general safety rules for paint equipment.
____ *4. Thinned paint; filled a suction-feed spray gun; and set for correct pressure, fan pattern, and fluid flow.
____ *5. Cleaned a suction-feed spray gun.
____ *6. Drained and serviced an air compressor.
____ *7. Listed the steps in painting a vehicle.

____ *8. Described the different types of paint undercoat materials.
____ *9. Listed the basic paint undercoats.
____ *10. Stated guidelines for quality undercoating.
____ *11. Described the types of finishes used on today's vehicles.
____ *12. Described the different types of coat application techniques.
____ *13. Described the different degrees of coat thickness.
____ *14. Stated the most common paint problems and their causes.
____ *15. Stated guidelines for preventing dirty paint.
____ *16. Mixed and applied a primer-surfacer, guide coat, and sealer.
____ *17. Primed and sealed a replacement panel.
____ *18. Color matched and applied metallic paint.
____ *19. Color matched paint and performed a spot repair.
____ *20. Painted a panel.
____ *21. Performed a complete paint job.

*Indicates core/essential objectives

COURSE: Automotive Body Repair II

Unit 7: Hardware, Glass, and Trim

Objectives: Upon completion of this unit, the student will:

1. Identify typical interior door components and hardware.
2. Identify typical door glass hardware.
*3. Remove and replace weatherstripping on a door.
*4. Remove and replace a window regulator.
5. Remove and replace a door latch assembly.
*6. Leak test and seal stationary glass.
7. Remove and replace a windshield or rear window.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Laboratory demonstration and practice

Suggested Resources:

Primary Source: Walters, Terry, and Walker, Susan S. Automotive Body Repairer. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1986.

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will identify six typical interior door components and pieces of hardware.
Objective 2: The student will identify nine pieces of typical door glass hardware.
*Objective 3: The student will remove and replace weatherstripping on a door to manufacturer's specifications.
*Objective 4: The student will remove and replace a window regulator to manufacturer's specifications.
Objective 5: The student will remove and replace a door latch assembly to manufacturer's specifications.
*Objective 6: The student will leak test and seal, if necessary, stationary glass.
Objective 7: The student will remove and replace a windshield or rear window to manufacturer's specifications.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____ 1. Identified typical interior door components and hardware.
____ 2. Identified typical door glass hardware.
____ *3. Removed and replaced weatherstripping on a door.
____ *4. Removed and replaced a window regulator.
____ 5. Removed and replaced a door latch assembly.
____ *6. Leak tested and sealed stationary glass.
____ 7. Removed and replaced a windshield or rear window.

*Indicates core/essential objectives

COURSE: Automotive Body Repair II

Unit 8: Detailing

Objectives: Upon completion of this unit, the student will:

*1. Describe the use of paint repair and protection products.
*2. State guidelines for compounding, polishing, and waxing.
*3. Detail a complete paint job.

*Indicates core/essential objectives

Suggested Instructional Procedures:

Lecture-discussion
Laboratory demonstration and practice

Suggested Resources:

Primary Source: Walker, Susan S., and VanWinkle, James. Automotive Body Refinisher. Stillwater, OK: Oklahoma State Board of Vocational and Technical Education. 1986.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will describe one use of four different products used in paint repair and protection.
*Objective 2: The student will state five guidelines for each of the following operations: compounding, polishing, and waxing.
*Objective 3: The student will detail a complete paint job.

*Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Described the use of paint repair and protection products.
____*2. Stated guidelines for compounding, polishing, and waxing.
____*3. Detailed a complete paint job.

*Indicates core/essential objectives

STUDENT PERFORMANCE RECORD

AUTOMOTIVE BODY REPAIR

AUTOMOTIVE BODY REPAIR I

Student: _____

This record is provided as an alternative to the student performance records at the end of each unit. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the course.

Place a check by each objective the student achieved; you may wish to note the date that the student achieved the objective.

C = Core competencies

____ 1. Listed facts concerning the occupational outlook for auto body repair workers.
____ C2. Matched Federal safety colors to their use.
____ 3. Described the different classes of fires.
____ C4. Stated general job safety rules.
____ C5. Stated dress-related safety rules.
____ C6. Stated safety rules related to equipment and tools.
____ C7. Stated safety rules related to the work area.
____ C8. Stated safety rules related to flammable liquids and toxic substances.
____ C9. Stated safety rules related to vehicles.
____ C10. Defined terms associated with hazardous materials.
____ C11. Identified categories of hazardous materials.
____ C12. Stated signal words or symbols that indicate how severe a hazard may be.
____ C13. Listed methods for reducing hazardous waste.
____ C14. Identified general procedures for storing hazardous materials and wastes.
____ C15. Identified and described the informational sections found on a Material Safety Data Sheet.
____ C16. Described general first aid procedures to follow in case of an accident involving hazardous materials.
____ C17. Identified safety equipment to be used with hazardous materials.
____ C18. Listed steps to follow in handling spills and waste disposal.
____ C19. Identified agencies to be contacted in case of an accident or for more information on hazardous materials.
____ 20. Named purposes of the VICA organization.
____ 21. Named beliefs that the VICA creed emphasizes.
____ C22. Identified general hand tools used in auto body repair.
____ C23. Identified and described the use of hand tools used for body straightening.
____ C24. Identified hand tools used for body filling and shaping.
____ C25. Identified hand tools used for special body work.
____ C26. Identified types of eye safety protection.
____ C27. Identified and described the use of hand operated power tools.

____ C28. Identified and described the use of portable and stationary power equipment.
____ C29. Stated rules for the safe use of power tools at work.
____ C30. Listed major components of the front-end assembly.
____ 31. Identified types of suspensions.
____ 32. Identified front cowl panels.
____ 33. Identified door section components.
____ 34. Identified floor panel sections.
____ 35. Identified rocker panel and pillar components.
____ C36. Identified roof components.
____ 37. Identified major components of the rear body assembly.
____ C38. Named types of frame construction.
____ C39. Used automotive reference texts and service manuals to identify body and frame components.
____ C40. Stated the purpose of preparing a surface for metal repair.
____ C41. Arranged in order the basic steps of surface preparation for metal repair.
____ 42. Stated the amount of exterior and interior surface area that needs to be repaired.
____ 43. Named moldings and trim that may need to be removed in surface preparation.
____ C44. Prepared exterior and interior metal surfaces for repair.
____ C45. Arranged in order the steps in assessing auto body metal damage.
____ C46. Stated the purpose of aligning detachable parts.
____ C47. Described the effects of bending auto body sheet metal.
____ C48. Identified classes of metal damage.
____ C49. Used a hammer and dolly to rough out a panel.
____ C50. Used a bumping or slapping spoon to rough out a panel.
____ C51. Aligned a hood.
____ C52. Aligned a fender.
____ C53. Aligned a door.
____ C54. Aligned a deck lid and checked for proper seal.
____ C55. Identified basic polishing techniques used in metal finishing.
____ C56. Described the applications of the different types of grinders used in metal finishing.
____ C57. Stated general safety rules for using power grinders.
____ C58. Used a grinder to remove surface rust and damaged paint.
____ C59. Prepared a steel panel for body filler.
____ C60. Listed guidelines for heat shrinking sheet metal.
____ C61. Listed reasons for using proper heat in shrinking sheet metal.
____ C62. Heat shrunk a high spot in a metal panel.
____ C63. Heat shrunk a gouge in a steel panel.
____ C64. Cold shrunk a high spot in a sheet metal panel.
____ C65. Listed safety rules for using body fillers.
____ C66. Listed guidelines for mixing and applying body fillers.
____ C67. Used plastic body filler to repair a metal panel.
____ C68. Stated the purposes of sanding.
____ C69. Stated the purpose of featheredging.

____ C70. Compared the characteristics of wet and dry sanding.
____ C71. Listed guidelines for hand sanding.
____ C72. Featheredged broken paint.
____ C73. Wet sanded for a complete paint job.
____ C74. Dry sanded for a complete paint job.
____ C75. Scuff-sanded a surface.
____ C76. Listed guidelines for effective application of masking paper and tape.
____ 77. Listed guidelines for removing masking.
____ C78. Masked a vehicle for spot repair.
____ C79. Masked a vehicle for panel repair.
____ C80. Masked a vehicle for a complete paint job.
____ C81. Stated welding safety rules.
____ C82. Identified components of oxyacetylene welding and cutting equipment.
____ C83. Named characteristics of a good weld.
____ C84. Identified the different types of oxyacetylene flames.
____ C85. Named factors that should be considered in selecting filler rods and welding tips.
____ C86. Set up equipment for oxyacetylene welding.
____ C87. Turned on, lit, adjusted, and turned off oxyacetylene welding equipment.
____ C88. Welded a butt joint with a filler rod.
____ 89. Listed purposes of flux.
____ C90. Listed purposes of braze welding filler rod composition.
____ C91. Braze welded a square-groove butt joint.
____ C92. Stated differences between flashback and backfire.
____ C93. Listed in order the steps to follow in case of flashback.
____ C94. Turned on, lit, adjusted, and turned off oxyacetylene cutting equipment.
____ C95. Cut mild steel plate.
____ 96. Identified the different types of bolts used in body and chassis construction and repair.
____ 97. Identified the different types of nuts used in body and chassis construction and repair.
____ 98. Identified the different types of screws used in body and chassis construction and repair.
____ 99. Identified the different types of washers used in body and chassis construction and repair.
____ 100. Identified the different types of rivets used in body and chassis construction and repair.
____ 101. Identified common interior hardware and trim items.
____C102. Listed mounting methods for interior handles.
____C103. Listed methods for fastening headliners.
____C104. Removed and reinstalled a clip-attached handle.
____C105. Removed and reinstalled a screw-attached handle.
____C106. Removed and reinstalled a door trim panel.
____C107. Listed safety precautions to observe when using volatile cleaners.
____C108. Matched general types of materials used in interior detailing to specific places where each is used.

____C109. Matched common spots, stains, and soils to cleaning materials or products recommended for their removal.
____C110. Cleaned painted interior surfaces.
____C111. Stated the use of common paint repair and protection products.
____C112. Stated guidelines for quality exterior detailing.
____C113. Detailed a complete body paint job.

AUTOMOTIVE BODY REPAIR II

Student: _____

This record is provided as an alternative to the student performance records at the end of each unit. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the course.

Place a check by each objective the student achieved; you may wish to note the date that the student achieved the objective.

C = Core competencies

____ C1. Matched Federal safety colors to their use.
____ 2. Described the different classes of fires.
____ C3. Stated general job safety rules.
____ C4. Stated dress-related safety rules.
____ C5. Stated safety rules related to equipment and tools.
____ C6. Stated safety rules related to the work area.
____ C7. Stated safety rules related to flammable liquids and toxic substances.
____ C8. Stated safety rules related to vehicles.
____ C9. Defined terms associated with hazardous materials.
____C10. Identified categories of hazardous materials.
____C11. Stated signal words or symbols that indicate how severe a hazard may be.
____C12. Listed methods for reducing hazardous waste.
____C13. Identified general procedures for storing hazardous materials and wastes.
____C14. Identified and described the informational sections found on a Material Safety Data Sheet.
____C15. Described general first aid procedures to follow in case of an accident involving hazardous materials.
____C16. Identified safety equipment to be used with hazardous materials.
____C17. Listed steps to follow in handling spills and waste disposal.
____C18. Identified agencies to be contacted in case of an accident or for more information on hazardous materials.
____C19. Named the functions of an estimate.
____C20. Listed the steps in making an estimate.
____C21. Described the procedure for completing a form used in stimating.
____C22. Listed factors that determine if a part is to be repaired or replaced.
____C23. Listed factors that determine time in straightening panels.
____C24. Wrote an estimate to refinish a door.
____C25. Wrote an estimate to straighten and refinish a door.
____C26. Wrote an estimate to straighten and replace parts on a front end assembly.
____ 27. Identified major parts of frames.

____ 28. Described the different types of frame and unitized body damage.
____ 29. Identified the frame repair control points.
____C30. Identified equipment used in gauging frame damage.
____C31. Identified the parts of a centering gauge.
____ 32. Stated guidelines for installing centering gauges.
____ 33. Listed methods for mounting centering gauges.
____ 34. Identified parts of a tram gauge.
____C35. Arranged in order the steps for gauging frame damage.
____C36. Described major actions performed during frame alignment.
____ 37. Identified major types of frame straighteners.
____C38. Stated safety rules to observe when using frame alignment equipment.
____ 39. Stated guidelines for aligning frames.
____C40. Named common equipment needed in shielded metal arc welding (SMAW).
____ 41. Distinguished between straight and reverse polarity.
____C42. Named the different types of operating adjustments on an arc welder.
____C43. Stated safety precautions to follow in operating arc welding equipment.
____C44. Started, stopped, and restarted an arc.
____C45. Made a pad in the flat position.
____C46. Made a square groove butt weld.
____C47. Identified the major components of a metal-inert-gas (MIG) welding unit.
____C48. Labeled elements of the MIG welding process.
____ 49. Stated characteristics of short-circuit transfer.
____C50. Stated the functions of the different controls on a typical MIG welding unit.
____ 51. Set up a spool-type wire feeder for MIG welding.
____ 52. Set up a flowmeter regulator for MIG shielding gases.
____ 53. Used short-circuit transfer to lay stringer beads on mild steel in the flat position.
____ 54. Used short-circuit transfer to construct a fillet weld lap joint on mild steel in the flat position.
____C55. Listed choices or options for correction of structural panel damage.
____ 56. Identified the different types of structural panel welds.
____C57. Listed methods for removing welded panels.
____ 58. Sectioned a quarter panel.
____ 59. Repaneled a door.
____ 60. Replaced an outer rocker panel.
____C61. Identified and described the use of automotive refinishing equipment.
____C62. Identified the parts of a suction-feed spray gun.
____C63. Stated general safety rules for paint equipment.
____C64. Thinned paint; filled a suction-feed spray gun; and set for correct pressure, fan pattern, and fluid flow.
____C65. Cleaned a suction-feed spray gun.
____C66. Drained and serviced an air compressor.
____C67. Listed the steps in painting a vehicle.

____C68. Described the different types of paint undercoat materials.
____C69. Listed the basic paint undercoats.
____C70. Stated guidelines for quality undercoating.
____C71. Described the types of finishes used on today's vehicles.
____C72. Described the different types of coat application techniques.
____C73. Described the different degrees of coat thickness.
____C74. Stated the most common paint problems and their causes.
____C75. Stated guidelines for preventing dirty paint.
____C76. Mixed and applied a primer-surfacer, guide coat, and sealer.
____C77. Primed and sealed a replacement panel.
____C78. Color matched and applied metallic paint.
____C79. Color matched paint and performed a spot repair.
____C80. Painted a panel.
____C81. Performed a complete paint job.
____ 82. Identified typical interior door components and hardware.
____ 83. Identified typical door glass hardware.
____C84. Removed and replaced weatherstripping on a door.
____C85. Removed and replaced a window regulator.
____ 86. Removed and replaced a door latch assembly.
____C87. Leak tested and sealed stationary glass.
____ 88. Removed and replaced a windshield or rear window.
____C89. Described the use of paint repair and protection products.
____C90. Stated guidelines for compounding, polishing, and waxing.
____C91. Detailed a complete paint job.